Conceptualizing Division with Remainders: Third Graders’ Struggles to Solve Contextualized, Student-generated Division Problems with Remainders Offer Insights to Guide Instruction

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Purpose
In this paper the authors summarize a lesson plan for third graders in which students had to rationalize division with remainders. Students received tangible materials to reason out the abstract concept of division with remainders.

The Article
Thompson developed a lesson plan that would provide third graders tangible items to solve division problems (i.e., play money). Third graders worked in four groups each receiving a bag of concrete items: 100-centimeter tape measure, 55 pencils, $56.88 in play money, and 75 square tiles. Using these tools students would create and solve a division problem – thus requiring students to consider what division means. Students began the process by physically distributing the items equally among one another.

Students displayed different levels of sophistication in the problem solving process. For instance, the group with the 100-centimeter tape measure decided to share the tape measure among two students, each receiving 50-centimeters. Then implemented tally marks to divide each half into smaller 10 cm pieces to make bows. In the pencil group 55, pencils were distributed among four students and the distribution was not equal and this was bothersome to students and they hid the remainder (uneven leftovers) “sanitizing” their problem solving.

Implications and Recommendations
Using items and informal methods to conceptualize helps generate a foundation to mathematics learning. Informal methods may not be an efficient method for problem solving, these strategies help produce scaffolding for number sense. Intuitively thinking about number sense should be fostered early to develop foundational mathematics learning.

Citation

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